

Claims

What is claimed is:

1. A method for locating harvested material, the method comprising:
 - receiving material data including material location data on a material location of harvested material within a work area;
 - obtaining background data on at least one established transportation path within the work area;
 - determining a forwarder location of a forwarder;
 - estimating economic cost factors associated with corresponding candidate paths or segments of candidate paths between the forwarder location and the material location; and
 - selecting a preferential path plan between the forwarder location and the material location consistent with the background data and minimization of the economic cost factors.
2. The method according to claim 1 further comprising:
 - establishing a drop-off location for the harvested material;
 - determining a path plan between the material location and the drop-off location.
3. The method according to claim 1 wherein the path plan comprises a shortest possible path that traverses at least one of a harvested area, an unharvested area, and a transportation path associated with the work area.
4. The method according to claim 3 wherein the material location and the harvested area is updated on a regular basis.
5. The method according to claim 1 wherein the harvested material comprises a material selected from the group consisting of grain, wood, cellulose, logs, and

crops.

6. The method according to claim 1 wherein the material location is updated after the addition of a new material location.

7. The method according to claim 1 wherein the background data comprises transient data associated with at least one of a time-dependent location of a machine in the work area, a time-dependent location of a person within the work area, and a time-dependent definition of a harvested area associated with the work area.

8. The method according to claim 1 wherein selecting a preferential path plan further comprises considering environmental factors to reduce soil compaction from the forwarder.

9. The method according to claim 1 wherein selecting a preferential path plan further comprises considering vehicle dynamic constraints related to the handling and maneuvering capabilities of the forwarder that is transporting a certain corresponding level of a load of the harvested material.

10. A method for locating harvested material, the method comprising:
collecting material data including at least one of harvester location data, material location data, a material identifier, a material attribute, and a material attribute value associated with the harvested material;
obtaining background data for the work area;
storing the collected material data and the obtained background data; and
making available the stored data to a forwarder.

11. The method according to claim 10 wherein the making available comprises transmitting the stored data from a harvester to a forwarder via an electromagnetic signal.

12. The method according to claim 10 wherein the obtaining background data comprises obtaining obstruction data, hazard data, ground cover data, topographical data, established transportation route data, established transportation path data, and vegetation data for at least part of the work area.

13. The method according to claim 10 wherein the obtaining background data comprises obtaining static data and transient data as the background data, wherein the static data remains generally constant over a greater sample period and wherein the transient data tends to vary over the greater sample period.

14. The method according to claim 10 further comprising:
marking the harvested material with a marker for referencing the collected material data.

15. The method according to claim 10 further comprising:
receiving stored data via an electromagnetic signal;
determining a forwarder location of a forwarder in the work area;
identifying a preferential path plan with an efficient path cost between a forwarder location and a material location and between the material location and the drop-off destination based the stored data, including material data and background data, and based on cost factor data.

16. The method according to claim 15 further comprising:
obtaining background data via forwarder electronics for supplementing, augmenting or replacing the stored background data.

17. The method according to claim 15 further comprising:
presenting the preferential path plan to the operator via a user interface.

18. The method according to claim 15 wherein the cost factor data comprises one or more of the following items: estimated travel time between a starting point and a

destination point of a candidate path plan or segment, empirical travel time between a starting point and a destination point of candidate path plan or segment, a travel distance between a starting point and a destination point of a candidate path plan or segment, and a travel distance between a material location and one or more corresponding drop-off locations.

19. The method according to claim 10 further comprising:

reading a marker for referencing the stored data;

determining a forwarder location of a forwarder in the work area;

identifying a preferential path plan with an efficient path cost between a forwarder location and a material location and between the material location and the drop-off destination based the stored data, including material data and background data, and based on cost factor data.

20. The method according to claim 19 further comprising:

obtaining background data via forwarder electronics for supplementing, augmenting or replacing the stored background data.

21. The method according to claim 19 further comprising:

presenting the preferential path plan to the operator.

22. The method according to claim 19 wherein the cost factor data comprises one or more of the following items: estimated travel time between a starting point and a destination point of a candidate path plan or segment, empirical travel time between a starting point and a destination point of candidate path plan or segment, a travel distance between a starting point and a destination point of a candidate path plan or segment, and a travel distance between a material location and one or more corresponding drop-off locations.

23. A system for locating harvested material in a work area, the system comprising:

a harvested material attribute sensor for collecting material data including at

least one of harvester location data, material location data, a material identifier, a material attribute, and a material attribute value associated with the harvested material;

a navigational/environmental sensor for obtaining background data for the work area;

a storage device for storing the collected material data and the obtained background data; and

a wireless communications device for making available the stored data to a forwarder.

24. The system according to claim 23 further comprising:

another wireless communications device for receiving stored data via an electromagnetic signal;

a location-determining receiver for determining a forwarder location of a forwarder in the work area; and

a data processor for identifying a preferential path plan with an efficient path cost between a forwarder location and a material location and between the material location and the drop-off destination based the stored data, including material data and background data, and based on cost factor data.

25. The system according to claim 23 further comprising:

a reading device reading a marker for referencing stored data;

another location-determining receiver for determining a forwarder location of a forwarder in the work area;

a data processor for identifying a preferential path plan with an efficient path cost between a forwarder location and a material location and between the material location and the drop-off destination based the stored data, including material data and background data, and based on cost factor data.

26. The system according to claim 23 wherein the data processor further comprises:

an estimator for estimating economic cost factors associated with

corresponding candidate paths or segments of candidate paths between the forwarder location and the material location; and

a selector for selecting a preferential planned path between the forwarder location and the material location consistent with the transient data, the background data, and minimization of the economic cost factors.

27. The system according to claim 26 wherein the data processor further comprises a guidance module for presenting guidance information on the selected preferential path plan to a user via a user interface.

28. The system according to claim 23 further comprising a user interface for entering the material data to supplement or complement an output of the harvested material attribute sensor.

29. The system according to claim 23 further comprising:

a central processor determining the preferential path plan from the collected material data and background data collected by one or more harvesters and sending the determined preferential path plan to a plurality of forwarders operating in the work area.